CLAIMS

Having thus described the preferred embodiments, the invention is now claimed to be:

1. A medical diagnostic imaging system **(10)** for acquiring images of a patient, coupled to a hospital network **(14)**, which includes a hospital database **(18)** and a plurality of hospital computers **(20)**, the system **(10)** comprising:

a means **(12)** for controlling the imaging system **(10)**, which controlling means **(12)** is coupled to the imaging system **(10)** and the hospital network **(14)** and includes:

a display **(44)**,

an applications database **(52)** which is configurable by a user, and

an interface means **(48)** for displaying interactive user interface screens **(46)** on the display **(44)**, which user interface screens **(46)** allow the user to configure the applications database **(52)** and interactively control the imaging system **(10)** by at least activating icons **(56)** and buttons **(58)** displayed thereon.

2. The system as set forth in claim 1, wherein the interface means **(48)** includes:

a protocol configuration means **(74)** for configuring optimal examination protocols in response to receiving optimization parameters entered by the user into at least data entry fields **(122)** displayed on the user interface screens **(46)**.

3. The system as set forth in claim 2, further including:

a protocol selection means **(120)** for choosing examination protocols in response to receiving patient's limiting parameters entered by the user into data entry fields **(122)** displayed on the user interface screens **(46)**, and displaying the chosen examination protocols on the display **(44)** from which the user selects a correct examination protocol.

4. The system as set forth in claim 1, wherein the interface means **(48)** includes:

a post-processing configuration means **(130)** for configuring post-processing packages in response to receiving acquisition and post-processing parameters entered by the user into at least data entry fields **(122)** displayed on the user interface screens **(46)**.

5. The system as set forth in claim 4, wherein the protocol selection means **(120)** includes:

a post-processing means **(136)** for automatically launching a correct post-processing package which matches patient's limiting parameters entered by the user into data entry fields **(122)**.

6. The system as set forth in claim 5, wherein the post-processing means **(136)** generates post-processed images simultaneously as the images of the patient are acquired.

7. The system as set forth in claim 6, wherein the post-processed images are automatically sent to a reviewing physician's hospital computer **(20)**.

8. The system as set forth in claim 4, wherein the post-processing configuration means **(130)** includes:

a visualization configuration means **(138)** for configuring visualization parameters in response to receiving acquisition and post-processing parameters entered by the user into the data entry fields **(122)**.

9. The system as set forth in claim 8, wherein the post-processing means **(136)** includes:

a visualization means **(140)** for automatically launching visualization parameters which match patient's limiting parameters entered by the user into data entry fields **(122)**.

10. The system as set forth in claim 1, further including:

a scanner **(24)** for acquiring images of a patient; and

a protocol selection means **(120)** for selecting examination protocols in response to receiving patient's limiting parameters entered by the user into data entry fields **(122)** displayed on the user interface screens **(46)**.

11. The system as set forth in claim 10, wherein the interface means **(48)** includes:

a parameters optimization means **(150)** for automatically selecting optimization parameters based on the selected examination protocol to correct at least one of:

voltage supplied to the scanner **(24)**,
amperage supplied to the scanner **(24)**, and
a doze supplied to the patient.

12. The system as set forth in claim 10, wherein the interface means **(48)** includes:

a pre-fetch means **(152)** for searching the hospital database **(18)** for previous scans and examinations of the patient, wherein the previous scans and examinations are automatically sent to the physician's hospital computer **(20)**.

13. The system as set forth in claim 12, wherein the parameters and protocols of previous examinations are used in the step of selecting the examination protocol.

14. The system as set forth in claim 12, wherein the previous scans have been generated at a different modality and the system **(10)** utilizes an auto registration technique to display the previous and current scans at the physician's computer **(20)**.

15. The system as set forth in claim 10, wherein the interface means **(48)** includes:

a slab review means **(160)** for merging image slices acquired by the scanner **(24)** into slabs of selected thickness which is interactively supplied by the user.

16. The system as set forth in claim 10, wherein the interface means **(48)** includes:

a log means **(180)** for automatically recording selected scanner's information including at least patient's information and scanner's running time into a digital log book **(182)**.

17. The system as set forth in claim 16, further including:

a remote statistics means **(190)** for remotely accessing and mining the digital log book **(182)**.

18. The system as set forth in claim 10, further including:

a mobile protocol means **(192)** for remotely specifying and loading examination protocols into the hospital database **(18)**, wherein the interface means **(48)** automatically uploads the examination protocols into the scanner **(24)**.

19. The system as set forth in claim 1, further including:

a measurement protocol configuration means **(200)** for configuring measurement protocols, which means **(200)** includes:

a measurement selection means **(220)** for selecting a list of measurements to be performed for each measurement protocol; and

a reference image means **(222)** for selecting a reference image which provides a visual indication of where each individual measurement is placed.

20. The system as set forth in claim 19, further including:

a measurement protocol means **(232)** for selecting a correct measurement protocol in response to receiving patient's limiting parameters entered by the user into data entry fields **(122)** displayed on the user interface screens **(46)**;

a measurement calculating means **(236)** for performing actual measurements; and

a measurement updating means **(242)** for storing the actual measurements.

21. The system as set forth in claim 1, wherein the interface means **(48)** includes:

a workflow means **(170)** for guiding the user through the imaging process which workflow means **(170)** presents the user interface screens **(46)** to the user in a subsequent order and prompts the user to enter data including at least patient's data, requested procedure and requesting physician.

22. A method of optimizing a throughput of the diagnostic image processing system **(10)** of claim 1.

23. In a medical diagnostic imaging system coupled to a hospital network **(14)** which interconnects a hospital archive database **(18)**, computers **(20)**, computer displays **(22)**, and diagnostic scanners **(24)**, a computer (12) programmed for at least one of:

(a) selecting a limited number of protocols from a menu of available protocols in accordance with entered patient size, patient age, radiologist identification, radiologist preferences, and the nature and region of patient to be scanned, and generating an operator interactive display of the limited number of protocols;

(b) automatically commencing post-processing during data acquisition in accordance with the types and format of images most commonly generated for a selected scan protocol;

(c) optimizing a tube voltage and tube current in accordance with an operator selected protocol;

(d) searching the hospital archive database for scans of a patient currently undergoing examination and routing the archive scans directly to the display terminal **(22)** of a diagnosing radiologist, automatically without waiting for a transfer request;

(e) searching the hospital archive database to determine if a current examination is a follow-up examination, determining parameters and scan protocols used in prior scans, and setting the scanner **(24)** to conduct the follow-up examination using the same parameters and scan protocols;

(f) searching the hospital archive database to determine preferences of a diagnosing radiologist and adjusting level, zoom, slice and slab thicknesses, windowing,

and other display characteristics in accordance with the retrieved preferences of the diagnosing radiologist;

(g) merging groups of slice images into a smaller number of slab images, sequentially displaying the slab images, and displaying the individual slice images corresponding to each slab image designated by a diagnosing radiologist;

(h) generating a series of prompts to an operator to lead the operator sequentially through an imaging procedure;

(i) for each scanner **(24)**, automatically generating a digital log book by collecting entered patient information and scan information for each patient examined by the corresponding scanner;

(j) at the beginning of a scan procedure, automatically uploading scan protocol information previously submitted from a remote computer or PDA.

24. The system as set forth in claim 23, wherein a computer is programmed to perform all of steps (a)-(j).